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The Pepper Weevil



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THE PEPPER WEEVIL

By J. C. ELMORE, and ROY E. CAMPBELL, *entomologists, Division of Truck Crop and Garden Insect Investigations, Bureau of Entomology and Plant Quarantine, Agricultural Research Administration*

VEGETABLE growers in California, Arizona, New Mexico, Texas, Georgia, and Florida who find small white grubs in fallen pods, or even in the blossom buds, of peppers may blame the pepper weevil¹ for the damage. Tiny holes in the pepper pods and the black and decayed condition of the seeds and the pulp around the seeds are further evidence that the pepper weevil is damaging the crop.



Small grub of pepper weevil in blossom bud of pepper. Enlarged.

The pupa, or resting stage, is white and slightly smaller than the larva. It can be distinguished from the larva by its partly developed snout, legs, and wings, which are folded around the body. The adult weevil is about $\frac{1}{8}$ inch long, black, and sparsely covered with gray or yellowish hairs. It has a smooth snout about half as long as the body.

The pepper weevil is the most important insect pest of peppers, wherever it occurs in the United States. Unless controlled, it destroys as much as half the crop in some years. In 1950 approximately 70,000 acres of peppers, having an estimated value of approximately \$17,250,000, were grown in the United States.

WHAT THE PEPPER WEEVIL LOOKS LIKE

HOW THE WEEVIL DAMAGES PEPPERS

Both the grub and the adult weevil damage peppers. The grub confines its feeding to the blossom buds or the pods. It may feed in the wall of the pod, but is more often found in the seed-core area. Feeding by the grub causes the blossom buds or small pods to fall to the ground and the large pods to be misshapen or discolored.

¹ *Anthonomus eugenii* Cano.



Pepper pods injured by pepper weevil: *A*, Pods showing holes made by the adult in emerging from pods; *B*, pods cut open to show black and decayed condition of the seed and the pulp around the seed, caused by the grub.

The adult weevil feeds upon the foliage, blossom buds, and tender pods. Damage by the weevil is not so severe as that caused by the grubs.

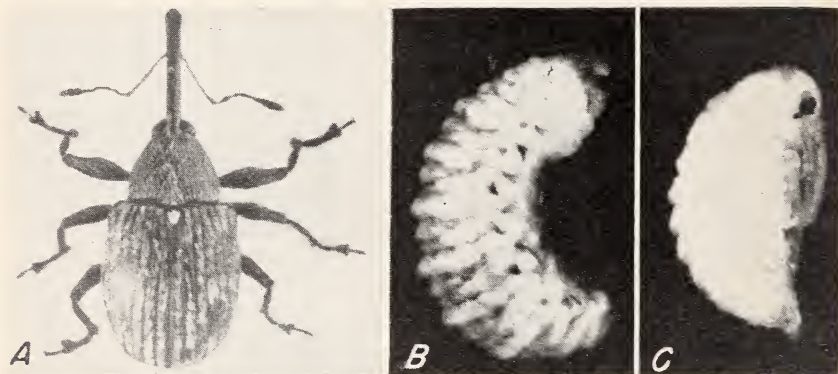
HOW THE PEPPER WEEVIL LIVES

FOOD PLANTS

In addition to pepper, the pepper weevil lives on a few other plants belonging to the nightshade family. In the winter and spring it feeds on wild nightshade, as well as on surviving pepper plants. In the absence of these plants it may live on eggplant and occasionally on potato foliage.

LIFE STAGES

The female weevil lays eggs in small holes which she punctures in the blossom buds or immature pods of the pepper. In 3 or 4 days the eggs hatch, and the small grubs feed and grow inside the buds or among the seeds of the immature pods. The grubs become full-grown in 8 to 10 days and then change to pupae. After about 4 to 6 days the pupae change to adults. The adults make round holes through the rind of the pods, through which they crawl to the outside, ready to lay eggs for another generation.



Stages of the pepper weevil: A, Adult; B, larva; C, pupa. Enlarged.

Complete development from egg to adult occurs within the blossom buds or the immature peppers in which the eggs were laid. The weevil may have from five to eight generations a year, depending on the weather. During cool weather the weevil may require 5 or 6 weeks to develop, but in warm weather it may need only 2 or 3 weeks.

SEASONAL ACTIVITY

In the spring one or two generations of the pepper weevil may develop in the berries of the nightshade or in the blossom buds of last year's pepper plants before the plants of the new crop are large enough to be attacked. In June the weevils fly to the new fields of peppers. Here they reproduce rapidly and soon become numerous enough to destroy most of the pods.

On cold days they crawl to the dead leaves at the base of the host plant for protection, but on warm days they crawl back up the plant to feed. Unfavorable weather or a scarcity of food may materially reduce the numbers of weevils that survive the winter. The pepper weevil may not appear for one or two seasons following a severe winter.

In Florida their seasonal activity begins in the fall and continues through the winter. Weevils survive the summer on old pepper plants in fields or on plants being grown in backyard gardens.

HOW TO COMBAT THE PEPPER WEEVIL

CULTURAL PRACTICES

Sanitation is the most important control measure that can be employed against the pepper weevil. Destroy old pepper plants by thoroughly disking or plowing the field as soon as the pepper crop has been harvested.

At least 50 days before planting the new crop, locate and destroy all nightshade plants growing near the old pepper field, so that the weevils will starve before the new crop is available for feeding.

If you live in an area where the pepper weevil cannot survive the winter, do not purchase pepper plants from infested areas.

Plant peppers early so that many of the pods will mature before the pepper weevils become numerous enough to destroy them.

Plant varieties known to produce early pods. The weevils cannot puncture mature pods, which have become smooth and hard.

Pick up the infested pods as soon as they fall, and bury or burn them. This practice will destroy the weevils that would otherwise come out and lay eggs.



Pepper pod cut open to show the pepper weevil grubs feeding in the seed and seed core.

USE OF INSECTICIDES

The pepper weevil may also be controlled by dusting the plants with 5-percent DDT or with cryolite containing 50 percent of sodium fluo-aluminate. DDT is the more effective. Apply DDT every 10 days or cryolite every 7 days until most of the pods have matured, and if the infestation is very heavy make the first three applications at shorter intervals, 7 days for DDT or 5 days for cryolite. In Florida cryolite has been reported to cause some injury to the foliage and buds of pepper.



Dusting peppers with a hand duster to control the pepper weevil.

In localities where the pepper weevil has been known to cause damage, make the first application as soon as the pods begin to set, and in localities where it has not appeared before, or in seasons of late weevil infestation, apply as soon as any injury or weevils are detected. Apply either dust at the rate of 15 pounds per acre when the plants are small, and gradually increase the dosage to 30 pounds per acre as the plants become larger. In general, ground machines give better results than aircraft, but if you use aircraft, increase the dosage by 10 or 15 pounds for each application.

Apply these dusts when the wind is not blowing, preferably at night or early in the morning. Carry the nozzles about 8 inches above the plants so that the dust will strike them from above. This is important, because the weevils attack the blossom buds and young pods on the upper branches.

DDT may also be applied as a spray. Use a 50-percent wettable powder at the rate of 1 pound per acre on small plants to $2\frac{1}{2}$ pounds per acre on large plants. The amount of water will depend upon the spray equipment. For example, with a conventional sprayer use 2 pounds of the 50-percent wettable powder to 100 gallons of water and apply at 50 to 125 gallons per acre. As with DDT dusts, apply at intervals of 10 days, and if the infestation is very heavy make the second and third applications 7 days apart.

The use of DDT or cryolite on pepper plants may cause large numbers of aphids, or plant lice, to develop, especially when the weather is favorable to them early in the season. Aphids can be controlled with a 4-percent nicotine, 1-percent parathion, or 1-percent rotenone dust. A dust containing 5 percent of DDT and 1 percent of parathion has given good control of both pepper weevils and aphids.



Dusting peppers with a power duster to control the pepper weevil.

REMOVAL OF RESIDUES

Both DDT and cryolite leave poisonous residues, which must be removed before the peppers are dried or offered for sale. Do not use these poisons on chili peppers that are to be dried, unless tested or approved washing equipment is available for removing the poison before drying. Agitate for 1 minute in a 2-percent hydrochloric acid solution heated to 100° F. to remove cryolite residues, and in water containing a detergent washing powder (1 pound to 50 gallons) to remove DDT residues. Rinse thoroughly in clean water. Samples of the pods should be chemically analyzed frequently to make sure that the poison is being successfully removed.

CAUTION.—In handling poisonous insecticides, take special care not to inhale them. Especially with parathion and nicotine, use a respirator. After working with insecticides, wash the hands or any other exposed parts of the body thoroughly, and change to clean clothes.

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